# 3.0 AFFECTED ENVIRONMENT

## 3.1 NATURAL ENVIRONMENT

### 3.1.1 Geographical Setting

US 8 is a principal east-west route across northwestern Wisconsin. It is part of the National Highway System beginning at the junction I-35 in Forest Lake, Minnesota, and terminating at the US 2 junction in Michigan's Upper Peninsula. The US 8 project corridor is 40 miles (64.4 km) long and lies in Polk and Barron Counties, Wisconsin. The project study corridor commences in the town of St. Croix Falls at WIS 35 (N) and continues east through Polk and Barron Counties and ends at US 53 as Figure 3.1.1-1 illustrates. Both Polk and Barron Counties are largely agricultural and rural, containing small Villages and cities. The economy is supported mainly by farming, manufacturing, and tourism. The City of St. Croix Falls is located west of the project limits and the community of Range is also located on US 8 in Polk County. Cities, Villages, and communities in Barron County near or located on the project corridor include the Village of Turtle Lake, the Village of Almena, the community of Poskin and the City of Barron. The Village of Cameron is located to the east of the project limits.

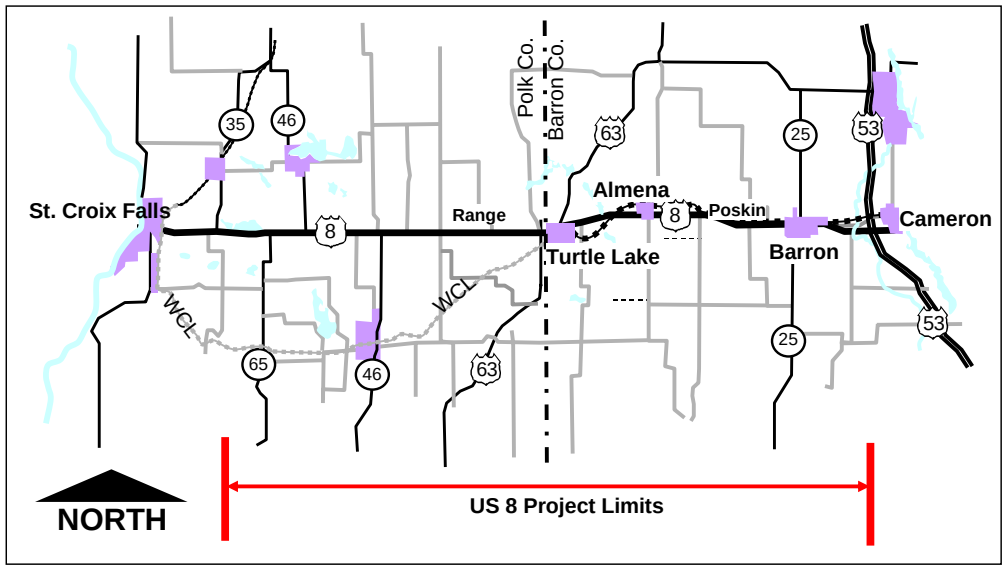


**Figure 3.1.1-1 US 8 Project Limits**

Polk County, covers a land area of 925 square miles (2396 km$^2$) with 34.2 square miles (89 km$^2$) of surface water (4 percent), and had a total population of 41,319 according to the U.S. Census Bureau, Census 2000. The county's population increased by 18.8 percent based on the 1990 Census count of 34,773. The St. Croix River forms the western border of the county with Minnesota and Barron County borders to the east. The Village of Balsam Lake is the county seat. The Polk County population density is relatively low, but most of the county population is within 50 miles (80.5 km) of the Twin Cities metropolitan area. Elevation ranges from 1,410 feet (430 m) above mean sea level (AMSL) in the northeast region to 680 feet (207 m) in the St. Croix River Valley.

Barron County contains approximately 863 square miles (2234 km$^2$) with 28.9 square miles (75 km$^2$) of surface water area (3.5 percent) and had a 2000 population of 44,963. The population increased by 10.3 percent since the 1990 Census of 40,750. This rural county is square and bordered to the west by Polk County and to the east by Rusk County. The City of Barron, population 3,248, is the county seat. The largest employer in the area, a company that produces turkey products, provides 2,000 jobs in the City of Barron. Elevations range from about 990 feet (302 m) in the southern part of the county near the Red Cedar River to about 1,640 feet (500 m) in the northeastern portion.

The climate of Polk and Barron Counties is typically continental with large year-to-year seasonal variations in temperature and precipitation. The average high and low January temperatures from the St. Croix Falls weather station in Polk County are 23.0°F and 0.3°F (-5.0°C and -17.6°C). The average high

and low July temperatures are 84.1°F and 60.0°F (28.9°C and 15.5°C), according to 1971-2000 data from the Midwestern Regional Climate Center.[1] The average high and low January temperatures from the Rice Lake weather station in Barron County are 19.0°F and -1.2°F (-7.2°C and –18.4°C), and the average high and low July temperatures are 80.1°F and 58.8°F (26.7°C and 14.9°C). The average annual precipitation for these two counties is about 30 inches (76.2 cm), and two-thirds of the annual precipitation is received during the growing season. Average snowfalls in Polk and Barron Counties are about 42 and 48 inches (106.7 and 121.9 cm), respectively. The median growing season is 143 days in Polk County and 124 days in Barron County.

Polk and Barron Counties are located primarily in the Central Plain region of Wisconsin. A southern portion of Polk County and the southwest corner of Barron County lie in the Western Upland region. The last stage of glaciation covered all of Polk County except for a southeastern portion, and about one-third of Barron County was covered. This glacial activity resulted in terminal moraine regions characterized by hills, kettle lakes and ponds. In this area the density of wetlands and lakes is greater. Both counties have northern hardwood and evergreen forest regions and southern plains agricultural regions. There is an abundance of scenic natural areas including forested regions, streams, lakes, and marshlands, which support a variety of wildlife. For these reasons, winter and summer tourism is popular in these counties and summer residence development is expanding on many of the larger lakes.

### 3.1.2 Natural History

The terrain of central Barron and Polk Counties has been shaped by a history of glacial advances. Sediment depositions from the glaciers have created the landforms in the counties, and the relatively large amounts of surface water can be attributed to glacial action. Relief is generally low except for the St. Croix River Valley and the Blue Hills in northeast Barron County. The major drainageways for Polk and Barron Counties, the St. Croix River and the Red Cedar River, respectively, were also carved by the glacial advances.

Bedrock in Polk County consists of limestone and sandstone typically under glacial till but exposed at the ground surface in a few areas. Bedrock of Barron County is characterized by Cambrian sandstone, Precambrian quartzite, and dolomite.

The current topography and drift deposits of Polk County are evidence of the Superior Lobe of the Wisconsin Glaciation stage, the last glacial stage.[2] This glacier covered a majority of Polk County, except for the southernmost portion. As temperatures warmed and the lobe retreated, melting ice masses left from terminal moraines created knob and kettle-type topography. Some kettles are simple bowl-shaped depressions, but others are now bogs, marshes, or lakes. Figure 3.1.2-1 illustrates kettle marshes along the US 8 corridor.

**Figure 3.1.2-1 Kettle Marshes are Present Along the US 8 Corridor**

In Barron County, the current landscape was shaped from glacial activity from 25,000 to 15,000 years ago.[3] During the last glaciation, lobes of the Wisconsin glacier covered only the northwestern and northeastern portions of Barron County. The corridor is in an area of outwash plains, ice-walled lake plains, and hummocks. These gently sloping plains are characterized by thick sediments that were deposited by glacial streams and glacial lakes. This thick sedimentation layer supports a region of prime

[1] Historical Climate Data from Midwestern Regional Climate Center, http://www.mcc.sws.uiuc.edu/Temp/WI, 2004.
[2] Wisconsin Geology and Natural History Survey, *Pleistocene Geology of Polk County WI*, 2000.
[3] Barron County, *Draft Land Use Plan*, 2001.

soils for agriculture. Terminal moraines of the north develop into plains and hills deeply cut by several river systems. The Red Cedar, Hay, Yellow, and Vermillion Rivers are well-established drainage ways with some associated swamp areas in the southern part of the county.

Vegetation and animal communities began to develop as the glacier age ended about 10,000 to 12,000 years ago. Prior to the arrival of European settlers, most of these two counties were forested. Barron County was 95 percent forested before the 1830s and 1840s. Forest regions in the counties included coniferous forest (white and red pines); deciduous forest (maple, basswood, and oak); mixed forest type (birch, pines, maple, and aspen); barrens (jack pine and scrub oaks); and oak savanna.[4] Many of the trees were cleared for logging, settlements, and agricultural land. Following development, Barron County was left with only about 30 percent of the land forested with second growth trees. According to the Forest Inventory Analysis Database, 1996 data shows Barron County to be about 28 percent forested (154,000 acres/62,322 ha) and Polk County to be about 44 percent forested (257,400 acres/104,166 ha).[5] The current forest areas are fragmented between agricultural areas. Many of the forests that were previously pastured are now forming closed canopy forested communities as passive recreational use of these areas increases.

### 3.1.3 Specific Corridor Resources

#### 3.1.3.1 Parklands and Recreational Facilities

Many public recreational opportunities are provided in the US 8 corridor area by county and community park facilities.

A. Apple River County Park

Apple River County Park, 0.5 mile (0.8 km) south of US 8 on the Apple River north of Amery in Polk County, is a heavily wooded 18 acre (7.3 ha) park. The park has hiking and snowmobile trails, canoeing, swimming, and picnic shelters.

D. Community Parks and Facilities

Several community parks and facilities for public recreation are located near US 8. Turtle Lake offers three public parks in the Village: Village Park, Railroad Park, and West Side Park. Village Park is located on US 8 and US 63 and offers camping, basketball courts, volleyball courts, an outdoor ice rink, picnic shelters, and playground. Railroad Park, located in downtown Turtle Lake, has a picnic shelter and is adjacent to the Cattail Trail. The Cattail Trail runs 18 miles (29 km) from the trailhead in Amery to Almena. The multiuse trail is popular for hiking, cycling, horseback riding, ATV use, and snowmobiling. West Side Park is located in a residential neighborhood off Ostermann Drive and provides playground facilities.

**Figure 3.1.3.1-1 The Hartzell Memorial Field Facility Owned by the Village of Turtle Lake**

The Village of Turtle Lake owns the Hartzell Memorial Field located along the north side of US 8 just east of the intersection with US 63 (N). The facility includes a lighted baseball field, parking lot and concession stand. A multiuse trail owned by the Village provides pedestrian and bike access to the baseball field through an 88-ft (26.8 m) long, concrete box culvert that passes under US 8.

[4] WDNR, *Wisconsin's Biodiversity as a Management Issue*, 1995.
[5] USFS, Forest Inventory Analysis Database search for Polk and Barron Counties, 2002. http://www.srsfia.usfs.msstate.edu/scripts/twig/temp, 2002

Almena's Shadyside Park at Park Avenue and County P offers a softball field, tennis courts, ice rink, and picnic shelter. The Almena Sportsman's Club owns property east of Almena to the north and south of US 8 on the Hay River. The club operates a shooting range south of US 8.

All of Barron's City parks take advantage of the City's scenic waterways. Anderson Park is north of US 8, east of North Mill Street on the Yellow River and provides river access with a boat launch. Picnic areas, tennis courts, playground, swimming pool, and pavilions are available. Becker Park is south of US 8 and east of Barron on the Yellow River. Recreational opportunities include a canoe launch, picnic areas, restrooms, playground, pavilion, and fishing. Lions River Park and Kiwanis River Park are both located off East LaSalle near the Yellow River Dam. A boat launch is available at the Kiwanis River Park and both parks have picnic areas and fishing. Peter S. Olson Park is located south of Barron on Fifth Street adjacent to Quaderer Creek and provides picnic areas, rest areas, and a play area. The Barron community also enjoys an outdoor municipal swimming pool and a community center with swimming, racquetball, track, and theater facilities.

### 3.1.3.2 Public Land and Conservation Organization Land

Numerous areas of federal, state, and locally owned land have been designated to protect wildlife, fishery, natural, and scientific resources. These areas are protected to provide feeding, breeding, nesting, and other habitat features for the abundance of plant and animal species in Polk and Barron Counties. Polk County owns over 30,000 acres (12,140 ha) of public land. The WDNR Bureau of Endangered Resources (BER) manages many State-owned areas. State-owned and protected land in the immediate corridor area is listed in Table 3.1.3.2-1. Many privately owned undeveloped areas in these northern counties are also valuable natural resource areas.

A state-owned Harvest Demonstration Forest, one of only a few in Wisconsin, is located just west of the Apple River and approximately 0.2 miles (0.32 km) south of US 8. The Apple River Timber Demonstration Forest contains 46 acres (19 ha) and the land for this forest was purchased in 1946. The current tree species managed in the forest are red oaks (85-95 years old), white pines, and northern hardwoods that dominate the understory. This state property has a long management history including maintaining northern hardwoods and exploring red oak and white pine regeneration. Another plot of county land, 29 acres (12 ha) west of the Apple River, is enrolled in the County Forest Law program and this area is within about 0.5 miles (0.8 km) of US 8.

Fishery areas are also a valuable resource in Polk and Barron Counties. Marquee Springs, surrounded by a 43-acre (17 ha) plot of land, is located about 0.5 miles (0.8km) south of the existing US 8 and 0.25 miles (0.4 km) west of Apple River County Park. This WDNR land of mostly tag alder marsh protects Marquee Creek, a Class I brook trout water. Many additional wildlife areas have been designated to preserve riparian and stream habitat and to protect water quality. Behning Creek Fishery Area, Joel Marsh Wildlife Area, and the Sweeny Pond Creek Public Hunting Grounds are prime fishing areas. Classified trout streams that have or may contain in the area include the Apple River, Balsam Branch, Behning Creek, Toby Creek, Hay River, Vermilion Creek, and the Yellow River.

A. Joel Marsh

The Joel Marsh State Wildlife Area in Polk County is located about 0.25 miles (0.4 km) from US 8 with two areas immediately adjacent to the highway, as shown in Figure 3.1.3.2-1. This 1,072-acre (434 ha) wildlife management area was established in the 1980s and is managed by the WDNR to protect this unique wetland. The US 8 project's involvement with the Joel Marsh Wildlife Area is discussed in Section 4.10 of this report, Section 4(f) and 6(f) Impacts.

The Joel Marsh Wildlife Area is contained within the Beaver Brook Watershed. The North Branch Beaver Brook drains to the Joel Flowage and then to the Joel Marsh. The marshland ultimately drains to the South Beaver Branch and then the Apple River. Most of the natural landscape of the area has been disturbed by human activities. The upland areas consist mostly of grazed aspen and oak woodlots. Approximately 868 acres (351 ha) of wetlands are contained in the area. The largest wetland complex, covering 792 acres (321 ha), is characterized by blue-joint grass and a mixture of sedges, swamp milkweed, marsh skullcap, and other wet meadow plants. About 61 acres (24.7 ha) of forested wetlands are vegetated with quaking aspen, green ash, and other wet-tolerant species. Aquatic vegetation, present in the Joel Flowage and the North Branch of Beaver Brook, is dominated by white and yellow water lilies, coontail, water milfoil, elodea, pondweeds, and duckweed.

Mammals common to the area include white-tailed deer, muskrat, beaver, otter, raccoon, least weasel, cotton-tailed rabbit, turkey star-nosed mole, mink and 25 other species. Twenty-three species of amphibians and reptiles are recorded for the area and most of these species thrive in the wetland areas of the Wildlife Area. Over 80 species of birds have been observed to breed and nest in the area, but large numbers of other species use the area as a rest stop or staging area during migration seasons. Joel Flowage provides abundant habitat for diving ducks, coots, grebes, and other birds. Great blue and green herons, American bittern, red-winged blackbirds, mallards, blue-winged teal, marsh hawk, short-billed marsh wrens, sora and virginia rails nest and breed in the marshland. Upland birds include the red-tailed hawk, owls, red-headed woodpecker, crested flycatcher, and a number a species of warblers.

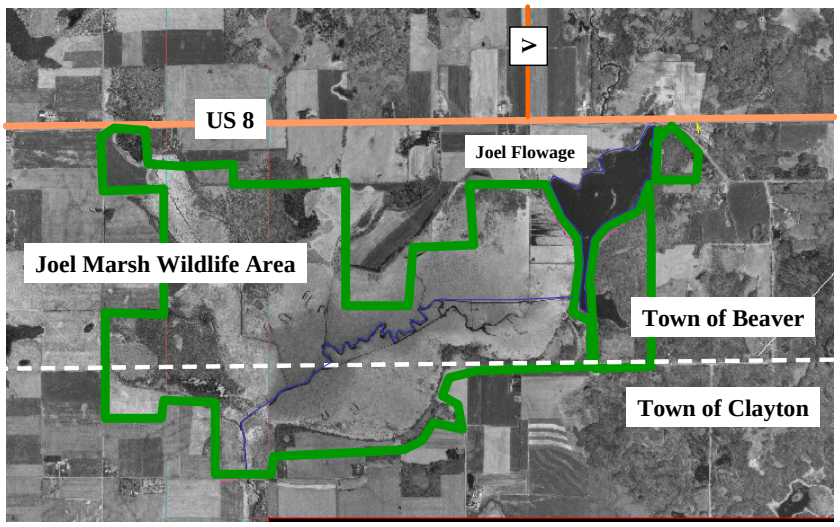


**Figure 3.1.3.2-1 Joel Marsh Wildlife Area Adjacent to US 8**

The Joel Marsh Wildlife Area Master Plan was approved May 25, 1983 by the WDNR. According to the plan, the land is to be developed for waterfowl management, waterfowl hunting, archaeological preservation, and to accommodate recreational activities such as nature study, photography, cross-country skiing, and hiking. The major areas of development for waterfowl management involved:

- Shallow flowages.
- Conversion of acquired agricultural lands surrounding the marsh to dense nesting cover and periodic burning.
- Excavation of natural depressions for waterfowl pair ponds.
- Management of acquired timber lands.
- Maintenance of the existing Joel Flowage.
- Construction of parking lots.

The objectives of the wildlife area are to provide habitat for approximately 600 ducks; a maximum of 2,000 participant days of waterfowl hunting, provide a scenic overlook; protection for archeological sites on the marsh, 900 participant days of small game and furbearer hunting; 3,000 participant days of recreational activities such as hiking, nature study, skiing, and photography; and habitat for other wildlife such as migratory, endangered and threatened species.

B. Cattail Trail

The Cattail Trail is a multiuse trail on a former rail bed and is open to hikers, bikers, equestrians, cross-country skiers, snowshoers, ATVs, motorcycles, snowmobiles and off-road motorcycles. Running from the trailhead location in Amery, it extends northeast and passes south of Turtle Lake to conclude in Almena. The trail is owned by WDNR and operated by Barron County for 7.4 miles (11.8 km) and Polk County for 11.7 miles (18.7 km). See Figure 3.1.3.2-2 for the location of the Cattail Trail in the study area.

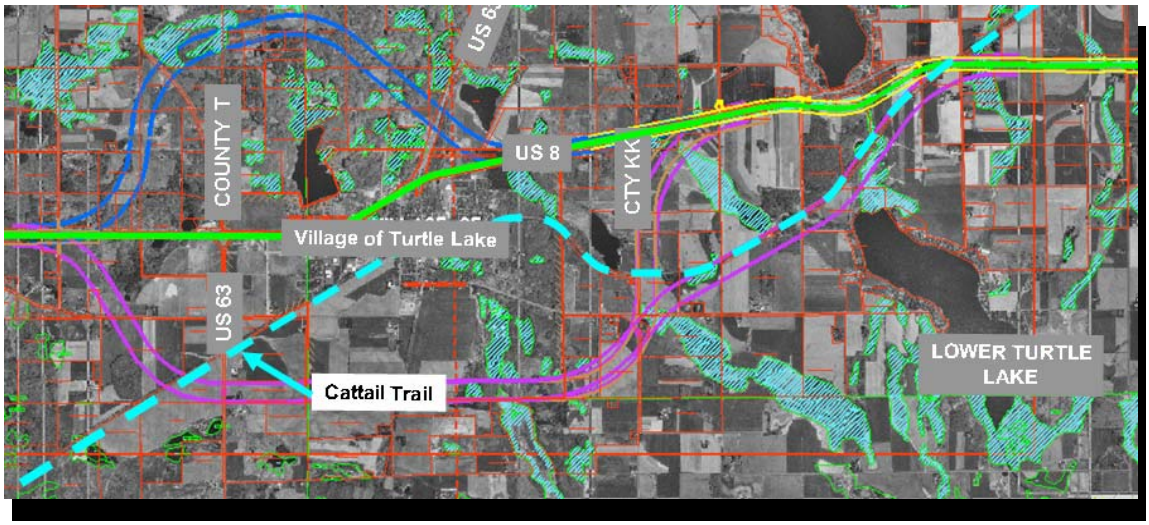


**Figure 3.1.3.2-2 Cattail Trail**

C. Deer Lake Conservancy Land

The Deer Lake Conservancy is a privately owned, non-profit conservation organization serving to protect Deer Lake. The organization owns about 70 acres (28.4 ha) of land just south of existing US 8 and Deer Lake (Flagstad Farm Preserve). In 2003, 50 acres (20 ha) of the farm fields were planted to native prairie. The project goal is to improve the water quality of the drainage from this parcel. WDNR provided the organization with funds from a Lakes Protection Grant to assist in the purchase of the parcel. The Deer Lake Conservancy believes this parcel of land is critical to the water quality of Deer Lake since it is a direct drainage area to the lake. The goal of the prairie restoration is to reduce phosphorus to the lake once the prairie is well-established.

**Table 3.1.3.2-1**

**Managed Public Lands and Conservatory Organizations in Project Corridor Area**

| Public Land | County | Biological Communities/Features | Approx Acres | Approx hectares | Distance from Existing US 8 |
|---|---|---|---|---|---|
| Apple River Timber Demonstration Forest (WDNR) | Polk | Northern Dry-Mesic Forest- (Mixture of White Pine, Red Oak, Sugar Maple, White ash, and Yellowbud). | 46 | 18.6 | 0.2 mile (0.32 km) South |
| Behning Creek Fishery Area (WDNR) | Polk | Forested area, riparian habitat, trout fishing. | 171 | 69.2 | 3 miles (4.8 km) |
| Balsam Branch Wildlife Area (WDNR) | Polk | Riparian habitat, marshland, nesting bird habitat. | 180 | 72.8 | 3 miles (4.8 km) |
| Dalles of the St. Croix River State Natural Area (WDNR) | Polk | Diverse geologic features, Southern Dry Forest, northern Dry-Mesic Forest. | 50 | 20.2 | 4 miles (6.4 km) west of corridor limits |
| Deer Lake Conservancy Land (privately owned) | Polk | Planned prairie and wetland restoration site to improve Deer Lake water quality. | 60 | 20.2 | Adjacent to existing R/W south |
| Interstate Lowland Forest (WDNR) | Polk | Southern wet forest, emergent aquatics, threatened bird habitat (cerulean warbler). | 90 | 36.4 | 4 miles (6.4 km) west of corridor limits |
| Joel Marsh State Wildlife Area (WDNR) | Polk | Forested wetlands, tamarack bog, pothole wetlands, sedge meadow, Oak and aspen uplands, endangered and threatened species habitat (red-shouldered hawk, bald eagle, ospreys, Blanding's turtle). | 1,072 | 433.8 | 0-1 mile (0-1.6 km) Adjacent South |
| Lightning Creek Wildlife Area (WDNR) | Barron | Riparian habitat, nesting habitat. | 329 | 133.1 | 0.0-0.5 mile (0.0-0.8 km) |
| Loon Lake Wildlife Area (WDNR) | Barron | Mesic and Dry-Mesic Forest, Northern Wet Forest, Northern Sedge Meadow, Shallow hard seepage lake, endangered/threatened bird habitat (red-shouldered hawk). | 800 | 324 | 3 miles (4.8 km) north along US 63 |
| Marquee Springs (WDNR) | Polk | Emergent wet/meadow wetland area surrounding Class I Brook trout stream, Marquee Creek. | 43 | 17.4 | 0.5 miles (0.8 km) |
| Polk County Forest Law Property (Polk County) | Polk | Not determined. County managed forests | 29 | 11.7 | Adjacent to existing R/W |
| Sweeny Pond Creek Public Hunting Ground (WDNR) | Barron | Forested wetlands, sedge meadow. Waterfowl and furbearers habitat. Bald eagle habitat. | 281 | 113.7 | 1 mile (1.6 km) |
| County T Flowage (WDNR) | Barron | Grassland. Hunting and trapping grounds. Habitat for mallards, blue winged teal, muskrats, great blue heron, and eagles. | 287 | 116.1 | 2 mile (3.2 km) |
| Quaderer's Creek Public Hunting Grounds (WDNR) | Barron | Riparian habitat and marshland. Waterfowl and furbearer habitat. | 350 | 141.6 | 1 mile (1.6 km) |
| Rice Beds Creek Wildlife Area (WDNR) | Polk | Marshland, forested uplands. | 3,101 | 1,254.9 | 7 miles (11.3 km) |

Source: WDNR Bureau of Endangered Resources (BER), *Natural Area Inventory of Polk County*", 1986 and WDNR BER, *Natural Area Inventory of Barron County,* 1986.

D. Waysides and Public Access

One wayside is located along the corridor, at the northwest quadrant of the US 8/WIS 35 (N) intersection. Public access boat ramps are available at two locations on Upper Turtle Lake, just north of US 8. Public access to the Red Cedar River is also available on County W and south of US 8 on 19th Street.

### 3.1.3.3 Water Resources, Floodplains, and Wetlands

A. Water Resources

The natural history of glacial advances has created a region with abundant surface water resources. These abundant lakes and rivers are of economic, recreational, and aesthetic value to Polk and Barron Counties. The lakes, rivers, streams, and waterways in the corridor are contained in two hydrologic basins, the St. Croix River Basin and the Lower Chippewa River Basin.

1. St. Croix River Basin

The St. Croix River lies to the west of the project serving as the western border of Polk County. The St. Croix National Scenic Riverway, listed under the National Wild and Scenic Rivers Act of 1968[6], is a 252-mile (406 km) corridor between Minnesota and Wisconsin. The river and its surrounding area create a habitat that is rich in aquatic and terrestrial wildlife. Environmental concerns include the high number of endangered species in the St. Croix River community and nonpoint source pollution from the river's tributaries. The St. Croix River was listed on the Proposed 2004 Wisconsin 303(d) Impaired Waters List for PCBs and fish consumption advisory. Impaired water bodies are waters not meeting the state's water quality standards based on either chemical or biological impairments.

The corridor study area crosses three subbasins of the St. Croix River Basin: Balsam Branch Watershed, Upper Apple River Watershed, and Beaver Brook Watershed. The major lakes and rivers in these watersheds are listed in Table 3.1.3.3-1.

**Table 3.1.3.3-1**

**Major Surface Water Resources in St. Croix River Basin and Project Corridor**

| | Balsam Branch Watershed | Upper Apple River Watershed | Beaver Brook Watershed |
|---|---|---|---|
| **Rivers** | Spring Creek | Apple River | North Beaver Brook |
| | Balsam Branch | | |
| | Toby Creek | | |
| | | | |
| **Lakes** | Little Round | Brusher Lake | Joel Flowage |
| | Round Lake | Clover Lake | Skinaway Lake |
| | Deer Lake | Shiloh Lake | |
| | Mud Lake | Gibson Lake | |
| | | Twin Lakes | |
| | | Deedon Lake | |

The Balsam Branch Watershed was listed in 1993 as a priority watershed project, and the Upper Apple River and Beaver Brook Watersheds were suggested to be listed as priority watersheds under the Wisconsin Non-point Source Water Pollution Abatement Program.[7] Priority watersheds and priority Lake programs are established as described in NR 120. A prior watershed or lake area is identified by the WDNR through a planning process and which has been designated by the land and waters conservation board as a watershed where the need for non-point source water pollution abatement is most critical. Nutrients from agriculture runoff are a common problem for all of the major streams along the corridor.

[6] WDNR, *The St. Croix River, Water Quality Management Plan. A five-year plan to protect and enhance*, Publ-WR-270-94 REV, February 1994.

[7] Ibid.

Excess nutrients and excessive silting lead to problematic plant growth. The streams and lakes are also experiencing shoreline development and stream-bank erosion problems.

Deer Lake contains 812 acres (329 ha) of surface area and is regarded as a high-quality resource. The lake supports a private resort, a large fish and wildlife population, and boating. Many of the other lakes support recreation and fishing as well. The Deer Lake watershed totals almost 5800 acres (2350 ha) and is largely on the north side of the lake. Deer Lake was listed on the Proposed 2004 Wisconsin 303(d) Impaired Waters List for mercury from atmospheric deposition and fish consumption advisory. The private organization Deer Lake Conservancy, discussed in Section 3.1.3.2, has been working since the 1990s to implement recommendations for planning studies to improve the water quality of the lake. One of the major goals for water quality improvement has been to reduce phosphorus inputs to the lake and subsequent nuisance aquatic plant growth. Projects such as sedimentation basins, wetland restorations, prairie restorations, and monitoring have been implemented starting in 1992. The Conservancy is also active in a prairie restoration or conservation plan for land they own south of Deer Lake and US 8. From the Deer Lake Management Plan, Osgood Consulting, February 2004, "there is some indication Deer Lake water quality is improving in the last five years, providing evidence the reductions in watershed phosphorus inputs are having a positive impact."

2. Lower Chippewa River Basin

The corridor in Barron County lies within three sub basins of the Lower Chippewa River Basin: Hay River Watershed, Yellow River Watershed, and Red Cedar River Watershed. The major lakes and rivers in these watersheds are listed in Table 3.1.3.3-2.

**Table 3.1.3.3-2**

**Major Surface Water Resources in Lower Chippewa River Basin and Project Corridor**

| | Hay River Watershed | Yellow River Watershed | Red Cedar River Watershed |
|---|---|---|---|
| **Rivers** | Lightning Creek | Sweeny Pond Creek | Red Cedar River |
| | Hay River | Vermillion River | Cranberry Creek |
| | | Quaderer Creek | |
| | | Yellow River | |
| | | Barker Creek | |
| | | | |
| **Lakes** | Mill Pond | Poskin Lake | |
| | Mud Lake | Sweeny Pond | |
| | Hilman Lake | Barron Flowages | |
| | Upper Turtle Lake | | |
| | Lower Turtle Lake | | |

The Hay River Watershed was one of the first five priority watershed projects designated under the Wisconsin Non-point Source Water Pollution Abatement Program in 1979, and in 1989, the Yellow River Watershed was listed.[8] Although the watershed projects are complete or near completion, the watersheds have continuing water quality problems mostly related to agricultural runoff. Upper and Lower Turtle Lakes are the largest lakes in the project study area. Both of these surface waters are valuable resources for recreation, sport fishing, and boating. Their watersheds and shorelines are less developed than other nearby lake resources.

The Red Cedar River and its receiving waters account for a third of the Chippewa River Basin. The river also provides habitat for many of the regions endangered and threatened species. This river drains thousands of acres of agricultural land. The urban areas of Rice Lake and Barron are located in the Red Cedar and Yellow River Watersheds, respectively. Environmental concerns of the Red Cedar River system include high levels of phosphorus, eutrophication, and low dissolved oxygen. Because of the large

[8] WDNR *Lower Chippewa River Basin, Water Quality Management Plan. A five-Year plan to protect and enhance our water resources*, Publ-WR 216-96 REV, May 1996.

amount of non-point source pollution, the Red Cedar River has been designated as an impaired water body on the WDNR 2004 proposed 303 (d) list.

3. Fisheries composition and habitat of the St. Croix and Lower Chippewa Basins

The numerous lakes and rivers along the corridor provide valuable habitat to many aquatic creatures. A rich habitat area is the result of the various open water, streambed, bank, and shoreline vegetation components. The following Table 3.1.3.3-3 outlines the wildlife resources of the lakes and streams in or near the corridor area.

**Table 3.1.3.3-3**

**US 8 Project Corridor Aquatic Habitat**

| Water Body | Type | Fish | Wildlife | Public Land |
|---|---|---|---|---|
| St. Croix River | Gradient | White sucker, carp, small mouth bass, catfish, walleye, sauger, large mouth bass, crappie, rock bass, white bass, flathead catfish, bullheads, quillback, blue sucker, gizzard shad, burbot, sheepshead | Mallards, black, wood, puddle ducks, coots, Canada geese, beaver, muskrats | Interstate State Park |
| Little Round Lake | Drainage | Northern pike, large mouth bass, bluegills, crappies, bullheads | Mallards, blue-winged teal | – |
| Deer Lake | Drainage, seepage | Large mouth bass, bluegills, rock bass, perch, crappies, walleye, bullheads, northern pike | Mallards, wood ducks | Access roads and/or boat ramps. |
| Spring Creek | Mixed C/W Drainage | Bass, panfish, cold-water forage species | Typical riparian | Limited. See below. |
| Toby Creek | Cold-water community | Trout | Mixed riparian buffer. | Limited. See below. |
| Balsam Branch | C/W water community | Northern pike, large mouth bass, bluegills, perch, bullhead | Typical waterfowl and aquatic/terrestrial species. | Limited to road crossings or other. |
| Brusher Lake | Seepage | Bass, panfish | Mallards, blue-winged teal, wood ducks | Limited to road crossings or other. |
| Clover Lake | Seepage | Bluegills and some game fish. | Mallards, wood ducks | 18-acre (7.3 ha) county wayside park, 700 feet (213 m) of frontage |
| Apple River | Drainage with impoundment | Brown and rainbow trout, northern pike, large mouth bass, perch, crappies, rock bass, bluegill, bullhead | Typical and large-scale riparian. | Limited. See above. |
| Twins Lake (North) | Drainage | Northern pike, large mouth bass, walleye, bluegill, crappies, perch, bullhead | Mallards, blue-winged teal | Boat launch |
| Twins Lake (South) | Drainage | Northern pike, large mouth bass, bluegills, crappie, perch, bullhead | Mallards, blue-winged teal | 200 feet (61 m) public frontage |
| Joel Flowage | Constructed flowage | Forage fish with limited Northern Pike or Panfish use. | Diverse and abundant including T&E species | Joel Marsh State Wildlife Area |
| South Beaver Brook | Borderline cold water | Brook trout, northern pike, large mouth bass, bluegill, bullhead | Beaver, muskrat, mallard, blue wing teal, wood duck | 1,600 feet. (488 m) county owned |
| Skinaway Lake | Soft-water seepage | Large mouth bass, bluegill, pumpkinseed, bullhead, fathead minnows | Muskrats, mergansers, puddle ducks | Distant to project. Not determined. |
| Old Mill Pond | Soft-water seepage | fathead & mud minnows | Muskrats, mallards, wood ducks | Distant to project. Not determined. |
| Mud Lake | Soft-water seepage | Fathead and mud minnows | Mallards, wood ducks, muskrats | Distant to project. Not determined. |
| Upper Turtle Lake | Hard-water drainage | Northern pike, walleye, large mouth bass, perch bluegill, black crappie, rock bass, pumpkinseed, bullhead, white sucker, carp | Muskrat, puddle duck, merganser, coot, loon, canada geese | 158 feet (48 m) public frontage |

| Water Body | Type | Fish | Wildlife | Public Land |
|---|---|---|---|---|
| Lower Turltle Lake | Hard-water drainage | Walleye, northern pike, large mouth bass, bluegills, black crappie, perch, rock bass, pumpkinseed, bullhead, white sucker, carp | Nesting and permanent resident puddle ducks, mergansers, muskrat | Two public access points |
| Turtle Creek | Warm-water shallow stream | Northern pike, rock bass, bullheads, white suckers, redhorse, burbot, minnows, carp | Puddle ducks, mergansers | Limited to road crossings or other. |
| Lightning Creek | Warm-water drainage | Forage fish | Muskrats, mallards, teal, wood duck, mergansers | Lightning Creek State Wildlife Area |
| Hay River | Warm-water sport fish community | Northern pike, walleye, large mouth bass, small mouth bass, bluegill, rock bass, bullheads, some brook trout, carp, white suckers, redhorse, burbot | Muskrat, beaver, puddle ducks, mergansers | Various crossings. |
| Poskin Lake | Hard-water drainage | Northern pike, large mouth bass, bluegills, black crappies, perch, pumpkinseed, bullhead, white sucker | Puddle ducks, mergansers, muskrats | Access from 1 to 2 ramps. Vermillion River nearby. |
| Vermillion River | Warm water | Northern pike, minnow | Muskrats, puddle duck | Various. |
| Sweeny Pond | Hard-water drainage impoundment | Northern pike, bullhead, white suckers, redhorse | Mallards, muskrats, black ducks, blue-winged teal, wood duck, mergansers | Game management waterfowl habitat project, pond constructed in 1963 |
| Sweeny Pond Creek | Drainage | Shiners, creek chubs | Puddle ducks, muskrats | Game management waterfowl habitat project near lower end |
| Barron Flowages #1 T34, R12, S27 on the Yellow River | Hard-water drainage impoundment | Bullhead, northern pike, large mouth bass, bluegills, crappie, pumpkinseed, walleye, small mouth bass, rock bass, brook trout, suckers | Muskrats, few ducks | City dam, 2,000 feet (610 m) of City frontage, small park |
| Barron Flowage #2 T34, R12, 28 on the Yellow River | Hard-water drainage impoundment | Bluegill, bullhead, brook trout | Extensive riparian habitat for aquatic and terrestrial species. | Historic City swimming area |
| Barron Flowage #3 T34N, R12, S21 on the Yellow River | Hard-water drainage impoundment | Bullhead, northern pike, large mouth bass, bluegill, black crappie, pumpkinseed, walleye, small mouth bass, rock bass, white sucker | Muskrat, beaver, nesting ducks. | City dam, landings |
| Quaderer Creek | Warm-water drainage | Minnows, northern pike, bluegill, bullhead | Beaver, puddle ducks | WDNR Conservation Department owned frontage |
| Yellow River | Cold-water | Brown, brook, rainbow trout (above Barron flowages); northern pike, small mouth bass, panfish (below flowages) | Muskrats, beaver, puddle ducks, mergansers | 7.9 miles (12.7 km) public frontage, Yellow River Wildlife Area |
| Four Mile Creek | Cold-water | Brook trout | Typical riparian adjacent to cropped areas. | Limited or not known. |
| Red Cedar River | Main drainage stream | Northern pike, walleye, small bass, perch, crappies, rock bass, bullheads | Muskrats, beaver, puddle ducks, mergansers, coot, Canadian geese | 530 feet (162 m) public frontage |

Sources: *Surface Water Resources of Polk County.* Wisconsin Conservation Department, Madison, WI, 1961, and *Surface Water Resources of Barron County,* Wisconsin Conservation Department, Madison, WI, 1964.

B. Flood Plains

The US 8 corridor intersects flood zone boundaries in several areas, and the 100-year floodplains typically outline the major drainageways and large water bodies in the corridor area. Development within the floodplain is regulated by Wisconsin Administrative Code NR 116, which is administered by the WDNR.

Flood Insurance Rate Maps, prepared by the Federal Emergency Management Agency (FEMA), were reviewed by the study team to identify the approximate boundaries of the 100-year flood zone along the US 8 project corridor.[9] Small areas of development in the 100-year floodplain occur in the City of Barron and in the Village of Almena. Mapping was not available for the Village of Turtle Lake. Undeveloped wetland areas and some agricultural fields are the main land uses in the 100-year floodplain.

Floodplains remaining in their natural undeveloped state provide benefits including floodwater storage, hydraulic stability of channels, pollution control due to reduction of velocity and deposition of pollutants and sediment, and habitat for species relying on periodic flooding.

C. Wetlands

Wetlands are areas that are periodically saturated with water, support hydrophytic vegetation, and contain hydric soil types. Wetlands serve as a buffer zone between surface waters and upland areas and have a variety of functions such as flood control and retention, groundwater recharge, fishery and wildlife, and floral diversity. Wetlands are vital to ecosystems because they absorb nutrients like phosphorus and nitrogen, trap sediments in runoff, and slow the effects of floodwaters. Wetland environments also provide a unique habitat for many types of aquatic and terrestrial species. Many of the counties' listed threatened and endangered plants and animals are found in wetland communities.

Wetland acreage and quality have steadily decreased and about 50 percent of Wisconsin's wetlands were lost from 1940 to 1990. Approximately 42,640 and 60,921 acres (17,256 and 24,654 ha) of wetlands exist in Barron and Polk Counties, respectively.[10] This amounts to about 7.7 percent and 10.4 percent of Barron and Polk Counties' total surface area. Several large wetland complexes exist along the project corridor, most of which outline the major drainageways. The following table summarizes the wetlands located in the project study corridor.

[9] From the online FEMA Flood map store, http://www.msc.fema.gov, 2003.

[10] WDNR, *County by County Wetland Acreage*, http://www.dnr.state.wi.us, 2001.

**Table 3.1.3.3-4**

**US 8 Project Corridor Major Wetland Areas**

| Wetland Areas | Type | Comments |
|---|---|---|
| Along Spring Creek | T3K | Forested Deciduous wetlands. |
| Along Toby Creek | T3/S3K | Forested and scrub/shrub deciduous wetlands. Corridor intersects. |
| Plain area between Toby Creek and Balsam Branch | S3/E2H<br>S3H<br>T3K | Scrub/shrub, emergent/wet meadow, and deciduous forested wetlands. Corridor intersects S3/E2H. |
| Along Balsam Branch | E2H<br>T3/S3K | Emergent/wet meadow and deciduous forested wetlands. Corridor intersects E2H. |
| Wetland land complexes along corridor southwest of STH 46. | T3K | Deciduous forested wetlands. |
| Joel Marsh State Wildlife Area | E2K(largest complex)<br>S3<br>S3H<br>T3K<br>S3K | Largest complex emergent/wet meadow, scrub/shrub, deciduous forested, tamarack bog, and aquatic bed. |
| East of Joel Flowage on US 8 | S3H | Deciduous scrub/shrub. Corridor intersects complex. |
| Near Mud Lake | S3K | Deciduous scrub/shrub. Adjacent to corridor. |
| Area west of Upper Turtle Lake north of US 8 | E2H | Floating emergent wet meadow. Adjacent to corridor. |
| North Branch Beaver Brook | T3/S3K | Tree and shrub wetlands. |
| Turtle Creek | S3K<br>E1K | Deciduous scrub/shrub and persistent emergent wet meadow. |
| Lightning Creek | E1K | Emergent wet meadow. |
| Along Hay River | S3K<br>T3K | Deciduous scrub/shrub and deciduous forested wetlands. |
| Along Vermillion River | S3K<br>E2H | Deciduous scrub/shrub, floating emergent wet meadow. |
| Western edge of City of Barron, north of corridor | S6/E2H | Evergreen scrub/shrub, floating emergent wet meadow. |
| Along Yellow River | T3K<br>E2H<br>E1K<br>A4H | Deciduous forested, emergent wet meadow, aquatic emergent. |
| Drainageway to Yellow River east of City of Barron | E1K<br>E1H | Emergent wet meadow. |
| Red Cedar River near the US 8/US 53 Interchange | S3K<br>T3K | Deciduous scrub/shrub, deciduous forester wetlands. |

Source: WDNR digital wetland mapping. 2000.

A large wetland area exists near the beginning of the corridor between Toby Creek and Balsam Branch. Most of the wetlands in this area are broad-leaved deciduous forested, deciduous scrub/shrub, and narrow-leaved emergent/wet meadow. The Joel Marsh Wildlife area protects hundreds of acres of narrow-leaved persistent emergent wet meadow as well as broad-leaved deciduous forest and scrub wetlands. The Lightning, Hay, Vermillion, Yellow, and Red Cedar Rivers also support large wetland complexes. Broad-leaved deciduous scrub/shrub wetlands are very abundant and narrow-leaved persistent emergent/wet meadow and needle-leaved deciduous forested wetlands are common along the riverways.

### 3.1.3.4 Subsurface/Drinking Water

Polk County receives most of its groundwater from sandstone and sand and gravel aquifers. Surficial sand and gravel aquifers can support high capacity wells that are 40 to 170 feet (12 to 52 m) in depth. Buried sand and gravel aquifers, with depths ranging from 20 to 365 feet (6 to 111 m), supply small to moderate amounts of water. Sandstone aquifers supply the southeastern part of the county with an abundant source of groundwater. The average well supplies 400 to 500 gallons per minute (1,514 to 1,893 liters per minute).[11] Groundwater quality in Polk County is generally of good quality.

The groundwater is generally abundant and of good quality in Barron County. Groundwater is used for over 90 percent of the domestic, agricultural, municipal, and industrial demand for water. A sandstone aquifer, which consists of Cambrian sandstone and Ordovician dolomite, underlies almost all of Barron County and is a reliable source for wells requiring large quantities of water.[12]

Groundwater contamination is a rising issue in this area due to continued agricultural land use and increasing metropolitan use of herbicides and lawn chemicals. High levels of nitrates have been noted in groundwater studies in Barron County. Several watersheds in Barron and Polk Counties, as discussed in Section 3.1.3.3, have been named as Priority Watersheds or have been listed on Section 303-D lists. Section 303(d) of the federal Clean Water Act requires each state to periodically submit to EPA for approval a list of impaired waters. Impaired waters are those that are not meeting the state's water quality standards. Plans have been developed to reduce nonpoint source pollution.

### 3.1.3.5 Wildlife Habitats

Habitat functions to provide wildlife with food, cover, water, and all other elements essential for survival. Habitat is a product of the slope, type, density, and diversity of the vegetation of an area. Surficial topography and food sources are also important habitat factors. Some of the land in the US 8 corridor is agricultural and rural residential, but it is scattered with forested, woodland opening, wetland, aquatic, and grassland habitats.

Forested habitats along US 8 tend to be fragmented within agricultural areas, but the forest patches still support a variety of wildlife. Wildlife that require large expansive forested areas reside in the northern parts of the counties. Forest communities in this area include northern mixed deciduous-coniferous mesic-forests and southern-deciduous mesic forests. Oak, aspen-birch, maple-beech-aspen, and white-red pine forest vegetation are present in the study area. Common forest mammals include gray and fox squirrel, snowshoe hare, woodchuck, red and gray fox, skunk, weasel, raccoon, shrews, cottontail rabbit, and moles. An abundant population of white-tailed deer thrives in the area because of the mixed woodland opening and agricultural land. Bobcat, coyotes, and black bear are present in small numbers. Upland bird species include ruffed grouse, woodcock, wild turkey, and ring-necked pheasant. A large number of songbirds are also present.

Forested, scrub/shrub, and wet meadow wetlands are also abundant along the corridor. The Joel Marsh Wildlife area, discussed in Section 3.1.3.2, is the most expansive wetland along the corridor and provides habitat to many species. Aquatic fur-bearers include beaver, muskrat, mink, and otters. The wetlands also support a variety of waterbirds such as herons, cranes, mallards, blue-winged teal, wood duck, sandpipers, rails, coots, and gulls. A large number of species of frogs and toads, turtles, and salamanders are also present.

Grassland habitat is limited and present in small, scattered patches. Grasslands exist mostly on wildlife management areas, like the County T flowage in Barron County, and on conservation reserve program fields. The USDA Natural Resources Conservation Service and County Land Conservation departments indicate that interest and acreage in conservation programs and re-establishment of grassland habitat is expanding because of farming retirements and hobby farm interests.

[11] USDA SCS, *Soil Survey of Polk County, WI*, 1979.
[12] Barron County, *Draft Land Use Plan*, 2001.

### 3.1.3.6 Threatened and Endangered Species

Plants, animals, and natural communities in Wisconsin are protected at both federal and state levels by endangered species acts. The Federal Endangered Species Act (ESA), passed in 1973, was designed to protect the existence of plants and animals as well as their habitat from becoming extinct from the earth. Species are classified as "endangered" if they currently exist in low numbers and their extinction is probable if protection is not implemented. Species are classified as "threatened" if their populations are declining and face a substantial risk of becoming endangered. The state law in Wisconsin also applies a third category know as "special concern." This list describes species that are rare and have had suspected problems in abundance and distribution.

The WDNR BER reviewed the Natural Heritage Inventory files for threatened and endangered species in the project corridor area. Information was included in a 2-mile (3.2 km) radius from the project area for terrestrial species and within a 5-mile (8 km) radius for aquatic species. The following listed species in Table 3.1.3.6-1 were noted from the WDNR BER's data file review conducted in August 2003. As of June 1, 2005, there have not been updates to the state lists.

**Table 3.1.3.6-1**

**Threatened and Endangered Species Identified Along Project Corridor**

| Species | Type | Listing | Location |
|---|---|---|---|
| Trumpeter Swan *(Cygnus buccinator)* | Bird | State Endangered | Joel Marsh/Flowage |
| Wood Turtle *(Clemmys insculpta)* | Turtle | State Threatened | Quaderer Creek |
| Assiniboine Sedge *(Carex assiniboinensis)* | Plant | State Special Concern | Barron Woods |
| Greater Redhorse *(Moxostoma Valenciennesi)* | Fish | State Threatened | Red Cedar River |
| Elktoe *(Alasmidonta marginata)* | Mussel | State Special Concern | Red Cedar River |
| Round Pigtoe *(Pleurobema sintoxia)* | Mussel | State Special Concern | Red Cedar River |
| Pygmy Snaketail *(Ophiogomphus howei)* | Dragonfly | Federal Species of Concern State Threatened | Red Cedar River |
| Green-faced Clubtail (Gomphus viridifrons) | Dragonfly | State Special Concern | Red Cedar River |
| Skillet Clubtail (Gomphus ventricosus) | Dragonfly | State Special Concern | Red Cedar River |
| Ozark Minnow (*Notropis nubilus)* | Fish | State Threatened | Vermillion River |
| Redfin Shiner *(Lythrurus umbratilits)* | Fish | State Threatened | Yellow and Vermillion Rivers, Barron Flowage |
| Weed Shiner (*Notropis texanus)* | Fish | State Special Concern | Yellow and Vermillion Rivers, Barron Flowage |
| Banded killifish *(Fundulus diaphanus)* | Fish | State Special Concern | Deer Lake |
| Longstem water-wort *(Elatine triandra)* | Plant | State Special Concern | Round Lake |
| Large-flowered ground cherry *(Leucophysalis grandiflora)* | Plant | State Special Concern | Town of Barron |
| Northern Dry-Mesic Forest | Natural Community | Sate Special Concern | Apple River Timber Demonstration Forest |

The longstem water-wort and large-flowered ground cherry were from historical records included in the data files that were 25 years or older. These records are an indication that the species may occur in the project area if appropriate habitat exists.

Both the bald eagle, *(Haliaeetus leucocephalus),* listed as threatened at the federal level and delisted by the state, and the osprey *(Pandion haliaetus)*, listed as endangered at the state level and may not be listed by the USFWS, may be observed in the study area; however, no nests are known to occur within the project corridor.[13] Bald eagles and ospreys have been noted flying over the Joel Marsh area on an irregular basis but have not used the area for breeding.[14] Other species of note on the state level include: the loggerhead shrike, an endangered bird, and the red-shouldered hawk, a threatened species, have been historically noted in Joel Marsh.[15] Red-shouldered hawks are found in wet forest habitat and along forested rivers. Blanding's turtle, another threatened species, also makes its home in the marshes and sedge meadows of Joel Marsh.[16] WDNR BER noted that although this turtle species was not included in the inventory list, it is likely present in Joel Marsh.

### 3.1.3.7 Soils[17]

The soils of Polk County are silty, loamy, and sandy and are underlain by sandstone and limestone bedrock. The soils of Barron County are predominant silt loams or loamy sands and are underlain by sandstone in most of the county, quartzite in the northeastern part of the county, and dolomite in the west-southwest area of the county.

Mapping from Polk and Barron County Soil Surveys, published by the United State Natural Resource Conservation Service (NRCS), was used to identify soils in the project corridor. NRCS soil surveys also list soils that are designated as prime for farming. Prime farmland yields the highest amount of crop with the lowest amount of energy input. The eight major soils groups and prime farmland designations are shown in Table 3.1.3.7-1.

**Table 3.1.3.7-1**

**Most Abundant Corridor Soils and Prime Farmland Designations**

| Major Soil Group | Prime Farmland |
|---|---|
| Rosholt loam (RoA and RoB) | Prime |
| Antigo silt loam (AtA and AtB) | Prime |
| Anigon silt loam (AnA and AnB) | Prime |
| Freenon silt loam (FnB) | Prime |
| Amery sandy loam (AlD and AlE) | Not prime |
| Magnor silt loam (MaB) | Not prime |
| Chetek sandy loam (CkB, CkC2) | Not prime |
| Amery complex (AoC and AoD) | Not prime |

[13] Information from WDNR, BER 2003.

[14] WDNR, *Final Environmental Impact Statement for the proposed acquisition, development, and management of Joel Marsh Wildlife Area, Polk County Wisconsin*, 1983.

[15] Ibid.

[16] Ibid.

[17] Modified from USDA SCS, *Soil Survey of Polk County, WI,* 1979, and USDA SCS, *Soil Survey of Barron County, WI,* 1948.

### 3.1.3.8 Agriculture

Agriculture has substantial economic importance in Polk and Barron Counties. When compared to other rapidly urbanizing areas of the state, rural land development pressure in the project study area has been less intense. The City of Barron is in the process of developing a comprehensive plan, but formal growth areas have not yet been identified. However, preliminary development plans suggest that the growth will be directed to the north side of the City. The Village of Turtle Lake has not prepared a comprehensive plan either, but based on the physiographic conditions extensive woodlands lakes and potholes on the north side of the Village, it is likely that future growth will occur to the south, an area currently in agricultural use. There are several agricultural-support businesses in the project study area including an implement dealer, cooperative, and a large turkey processing facility. The size and type of farms in the project study area are influenced by the underlying soil type, bedrock, vegetation (especially wetlands), and presence of surface water.

As reported in the 1997 agricultural census,[18] the average farm size in Barron County is 235 acres (95 ha). Crop sales accounted for 14 percent of the market value and livestock sales accounted for 86 percent of the market value. The top three livestock commodities were turkeys, cattle, and chickens. The top three commodities by value of sale were dairy products, poultry and poultry products, and corn for grain. The average market value of agricultural products sold per farm increased 27 percent between 1992 and 1997 from $93,403 to $118,900. Between 1987 and 1997, the number of farms dropped 16.6 percent from 1,659 to 1,384. Over the same time period the total land acres farmed decreased 13.2 percent from 374,522 acres to 325,009 acres (151,563 ha to 131,526 ha). Between 1987 and 1997, the estimated market value per farm of land and buildings increased from $145,265 to $196,970 (35.6 percent).

In Polk County the average farm is 206 acres (83 ha). Crop sales accounted for 24 percent of the market value and livestock sales accounted for 76 percent of the market value. The top three livestock commodities were cattle, turkeys, and sheep and lamb. The top three commodities by value of sale were dairy products, corn for grain, and cattle and calves. The average market value of agricultural products sold per farm increased 6 percent between 1992 and 1997 from $49,315 to $52,225. Between 1987 and 1997, the number of farms dropped 15.5 percent from 1,081 to 913. Over the same time period the total land acres farmed decreased 6.7 percent from 281,891 acres to 262,799 acres (114,077 ha to 106,350 ha). Between 1987 and 1997, the estimated market value per farm of land and buildings increased from $225,833 to $355,095 (57 percent).

Of the total land area in Barron County, nearly 68 percent of the soils are classified as Class I, II, or III soils. The 1979 Barron County Farmland Preservation Plan considered soils with these capability classes prime agricultural lands. By comparison, 56 percent of the soils in Polk County are Class I, II, or III soils.

## 3.1.4 Environmental Quality

### 3.1.4.1 Noise

Sound levels are measured in units called decibels. Since the human ear does not respond equally to all frequencies (or pitches), measured sound levels are often adjusted or weighted to correspond to the frequency response of human hearing and the human perception of loudness. The weighted sound level is expressed in units called A-weighted decibels (dBA) and is measured with a calibrated sound level meter. Table 3.1.4.1-1, “Noise Levels in Our Environment,” provides an illustration of typical sound levels in dBA. Sound levels which correlate with the human perception are also expressed with the descriptor $L_{eq}$. The term $L_{eq}$ is defined as the equivalent steady-state sound level which, in a stated period of time, contains the same acoustical energy as the time-varying sound level during the same period.

[18] USDA, National Agricultural Statistics Service, http://www.usda.gov/nass, 1997.

**Table 3.1.4.1-1**

**Noise Levels in Our Environment**

| Points of Reference | Loudness (dBA) |
|---|---|
| Softest sound a person can hear | 0 |
| Normal Breathing | 10 |
| Whispering at 5 feet | 20 |
| Soft Whisper | 30 |
| Rainfall | 50 |
| Normal Conversation | 60 |
| Shouting in ear | 110 |
| Thunder | 120 |

| Home | Loudness Range (dBA) | Work | Loudness Range (dBA) | Recreation | Loudness Range (dBA) |
|---|---|---|---|---|---|
| Refrigerator | 50 | Quiet Office, Library | 40 | Quiet Residential Area | 40 |
| Electric Toothbrush | 50-60 | Large Office | 50 | Freeway Traffic | 70 |
| Washing Machine` | 50-75 | Power Lawn Mower | 65-95 | Heavy Traffic, Noisy Restaurant | 85 |
| Air Conditioner | 50-75 | Manual Machine Tools | 80 | Truck, Shouted Conversation | 90 |
| Electric Shaver | 50-80 | Handsaw | 85 | Motorcycle | 95-110 |
| Coffee Percolator | 55 | Tractor | 90 | Snowmobile | 100 |
| Dishwasher | 55-70 | Subway | 90-115 | School Dance, Boom Box | 100 |

Source for table 3.1.4.1-1 The League for the Hard of Hearing, www.lhh.org

Noise is defined as unwanted sound. The sounds generated by vehicular traffic constitute noise to people, and can interrupt normal activities when they reach a certain level. Non-traffic sources can also contribute to unwanted sound levels. Examples of potential non-traffic sources of noise along the corridor may include noise generated from normal business operations at Almena Country Comfort and Mini-Storage east of Almena (east of the intersection of County P and US 8), at Poskin Feed Store (east of the intersection of 14th Avenue and US 8), and at the Jenny-O Turkey Store (northeast corner of US 8 and WIS 25N). Noise originating from business operations would likely be instantaneous as from back-up alarms on trucks or heavy equipment or other indicator alarms such as those signaling a shift change. Businesses such as granaries and farm cooperatives may have seasonal noise associated with grain storage and drying. Areas that would likely be sensitive to noise include residential developments, recreational areas, schools, churches, and cemeteries. Commercial and industrial land users would generally be less sensitive to noise.

Noise sensitive sites along the US 8 project corridor have been identified. Field readings have been taken at representative locations using a Larson Davis System 814 Sound Level Meter to determine existing sound levels in areas of proposed new roads. Existing sound levels at current roads within the project corridor are predicted through modeling, using the Federal Highway Administration's (FHWA) Traffic Noise Model (TNM) version 2.5. See Appendix D "Noise Analysis," for sound level reading locations. A more detailed discussion of the existing and future sound levels, possible noise impacts, and possible mitigation measures can be found in Section 4.1.2.1, "Environmental Consequences." A discussion of possible construction related noise impacts and possible mitigation measures can also be found in Section 4.8.1, "Construction Noise."

### 3.1.4.2 Air Quality

Air pollution is the contamination of the atmosphere with gases or particulate matter that are harmful to the human environment. The United States Environmental Protection Agency (USEPA), through the 1970 Clean Air Act, has established National Ambient Air Quality Standards (NAAQS) for six Criteria Air Pollutants. These Criteria Air Pollutants are regulated by USEPA on the basis of information on health and environmental effects. The six pollutants are: nitrogen dioxide ($NO_2$), carbon monoxide (CO), sulfur oxides ($SO_x$), inhalable particulate matter ($PM_{2.5}$, $PM_{10}$), airborne lead (Pb), and ozone ($O_3$). Attainment and maintenance of these standards was reinforced by the 1977 and 1990 Clean Air Act Amendments.

1. Nitrogen Dioxide ($NO_2$)

Nitrogen dioxide ($NO_2$) is reddish–brown and has a pungent odor. $NO_2$ may be responsible for part of the reddish-brown color of photochemical smog. $NO_2$ formation is not directly related to transportation sources, but some $NO_2$ is produced by the atmospheric oxidation of NO. NO is formed when combustion takes place at high pressure. In urban areas most NO is emitted by automobile engines. $NO_2$ is presently not a problem in Wisconsin. NO does not appear to produce a health hazard but $NO_2$ affects human health by producing nose and eye irritations. Higher concentrations of $NO_2$ produce bronchiolitis and pneumonitis.

2. Carbon Monoxide (CO)

CO is a colorless, odorless, poisonous gas produced most often during incomplete combustion of fuel in a poorly tuned automobile engine. Automobiles account for the majority of the CO produced, which results in high CO levels in urban areas with heavy traffic. Concentrations of CO typically found in an urban environment (30 ppm) can reduce the oxygen-carrying capacity of the blood that can affect an individual's health to various degrees. Symptoms include impaired vision to decreased mental acuity.

3. Sulfur Oxides ($SO_x$)

This pollutant category includes sulfur dioxide ($SO_2$), sulfur trioxide ($SO_3$), sulfuric acid ($H_2SO_4$), and sulfur salts. Most $SO_x$ emitted is in the form of $SO_2$, a colorless gas with an irritating odor. Automobiles account for a minimal percent of $SO_2$ emissions because of the low levels of sulfur in gasoline. $SO_2$ easily combines with moisture to form a corrosive acid that irritates lung tissues, damages vegetation, and disintegrates building materials, textiles, and paper.

4. Inhalable Particulate Matter ($PM_{2.5,}$ $PM_{10}$)

$PM_{2.5,}$ $PM_{10}$ is any material less than or equal to 2.5 or 10 microns in size that exists as a solid or liquid in the atmosphere under standard conditions of a temperature of 68°F (20°C) and barometric pressure of 101,325 pa (760 mm) of mercury. In urban areas, automotive sources account for minimal amount of the manmade particulate emissions. $PM_{2.5,}$ $PM_{10}$ in general is an irritant to the respiratory system.

5. Lead (Pb)

Lead is a byproduct of combustion of leaded gasoline in motor vehicles. Lead is the primary cause of gastrointestinal and neurological dysfunction in children and also in adults at blood concentrations greater than 1.93 umol/L. The primary route of entry into the environment is as an airborne particulate. Other sources of lead may be caused by urban dust, paint, mining, and natural decay from erosion.

6. Ozone ($O_3$)

Ozone is the product of the photochemical reaction of hydrocarbon compounds with NO and $NO_2$. It is a colorless, toxic gas. Unlike the other pollutants described, ozone is not emitted directly into the atmosphere; it is a secondary pollutant formed through the chemical reaction between primary pollutants. $O_3$ damages plants and trees and cracks rubber products such as automobile tires. Ozone is Wisconsin's most serious summertime pollutant.

These standards have been adopted by the State of Wisconsin through Wisconsin Administrative Code–Chapter NR 404. Air quality standards are definitions of the characteristics of ambient air quality, which, in terms of present day knowledge, need to be maintained in order to protect the public health and welfare and our environment from adverse effects of air pollution. The goal of the air quality regulations is to ensure that various levels of pollutants do not exceed set standards, and, where pollution levels are presently less than standards, to prevent the substantial deteriorations of the ambient air quality.

The proposed US 8 project is located in the Southeast Minnesota–La Crosse, (Wisconsin) Interstate Air Quality Control Region as designated under Wisconsin Administrative Code–Chapter NR 404.03. According to the USEPA, both Polk County and Barron County is presently in attainment of the NAAQS for all pollutants of concern.

### 3.1.4.3 Hazardous Materials

A Phase 1 Reconnaissance and Record Review was conducted in Fall 2001/Winter 2002 along the US 8 study corridor to assess areas of potential environmental concern along the corridor and potential bypass routes. The study area included a 0.2-mile (0.4 km) radius north and south of US 8 along the corridor. The search radius was extended 1 mile (1.6 km) north and 2 miles (3.2 km) south around Turtle Lake and 2 miles (3.2 km) north and 2 miles (3.2 km) south around Barron to include areas for potential bypass routes.

The investigation included a review of environmental databases, field reconnaissance, and interviews with local officials. Data sources included:

- National Priorities List (NPL)
- Federal Comprehensive Environmental Response, Compensation, and Liability Index System (CERCLIS) List (Active and Archive)
- Federal Resource Conservation and Recovery Act–Treatment Storage, and Disposal Facilities List (RCRA TSD)
- Federal RCRA Generators List (RCRIS)
- Federal Resource Conservation and Recovery Information System Corrective Action Sites (CORRACTS)
- Federal Emergency Response Notification System List (ERNS)
- Federal PCB Activity Database System (PADS),
- Federal Toxic Release Inventory (TRI)
- Federal Section Seven Tracking System (SSTS)
- Federal Civil Enforcement Docket
- Federal Toxic Substances Control Act Inventory (TSCA)
- Wisconsin Hazard Ranking List (HWS)
- Wisconsin Department of Commerce Registered Storage Tank (RST) List
- WDNR Leaking Underground Storage Tank (LUST) List
- WDNR Environmental Repair Program (ERP) List
- WDNR Registry of Waste Disposal Sites
- WDNR Spills Summary Report

RCRA Generator, ERNS, RST, and Spills databases were searched for a 0.25-mile (0.4 km) radius from the defined study area boundary. TRI and WDNR LUST databases were searched for a 0.5-mile (0.8 km) radius from the study area boundary. The remaining databases were searched 1.0 mile (2 km) from the study area boundary. For all of the mainline searches, the 0.25-mile (0.4 km) radius from existing US 8, the defined study area, was included in all the database searches.

The field reconnaissance review included a windshield review of the corridor, visually inspecting potential sites of concern, and photographing sites. Sanborn maps, United States Geological Survey (USGS) maps, and aerial photos of the corridor were reviewed. Present and past land use was evaluated for parcels along the corridor assuming that acquisition and excavation would be required for construction of the build alternatives. Sites of potential environmental concern were identified during the investigation. Since construction activities are not defined at this time, some sites may require additional Phase 1 or Phase 2 investigation.

The Phase 1 identified 116 hazardous material sites within the specified search radii and the sites were defined as “high,” “medium,” or “low” risk. Most of the sites were located near the populated areas along the corridor, but a few sites were located in the rural areas from WIS 35 (N) to Range. The majority of sites with medium- and high-risk rankings were located in or near Barron with direct access to US 8. Information from the Phase 1 Reconnaissance and Record Review report and an Addendum letter report are provided as Appendix D.

### 3.1.4.4 Visual Aesthetics

Visual aesthetics vary from rural to urban along the corridor. Representative views are shown in Figures 3.1.4.4-1 through 3.1.4.4-5. The section of US 8 from 200th Street to WIS 35 (N) is relatively flat with a few slightly rolling hills. Views from the roadway are mostly agricultural fields mixed with forested areas with a few view changes through the rural communities. Many residences and farm buildings are interspersed along the corridor. Wetlands and riparian views are common along the corridor at the many river and waterbody crossings. The current speed limit along the corridor is 55 mph (88.5 km/h) in most areas, with slower speeds through communities.

**Figure 3.1.4.4-1 View of South Side of US 8 Near Deer Lake**

Traveling east along the corridor from the western limit, some businesses are present on the south side of US 8 from 200th Street to WIS 35 (N). Deer Lake is visible from US 8 where the two southern bays are closest to the highway. The view from the western end of the project is mostly forested with some agricultural tracts. US 8 crosses Clover Lake and the Apple River between County H and WIS 46 (S). The corridor crosses the southern lake of Twin Lakes just west of Range.


**Figure 3.1.4.4-2 Along US 8 in Turtle Lake Looking East**


**Figure 3.1.4.4-3 City of Barron**

Range is the first rural community traveling east along the project corridor; residences and some businesses are located near the highway in this community. The Joel Flowage and the surrounding wetlands are located just east of Range on US 8.

Village of Turtle Lake businesses and residential areas are present for approximately 1.5 miles (2.4 km) along US 8. The community's biggest tourist attraction, the St. Croix Casino, is also visible from US 8. Many businesses and residences are located adjacent to US 8 through the community. Just east of Turtle Lake, Upper Turtle Lake is visible from the roadway. The view continues to be mostly agricultural land from Turtle Lake to Almena with some forested and wetland tracts along the edges of the fields. A few businesses are located along the roadway in Almena. US 8 crosses Lightning Creek and the Hay River just east of Almena. The view from Almena to Poskin continues to be largely agricultural with some forested areas mixed with wetlands. Through Poskin there are a few businesses and a feed mill along US 8. Sweeny Pond Creek is intersected by US 8 just east of the community. The corridor continues through the City of Barron, where the view changes to businesses and residences very close to US 8 for about two miles (3.2 km).


**Figure 3.1.4.4-4 Forests and Wetlands Along US 8**

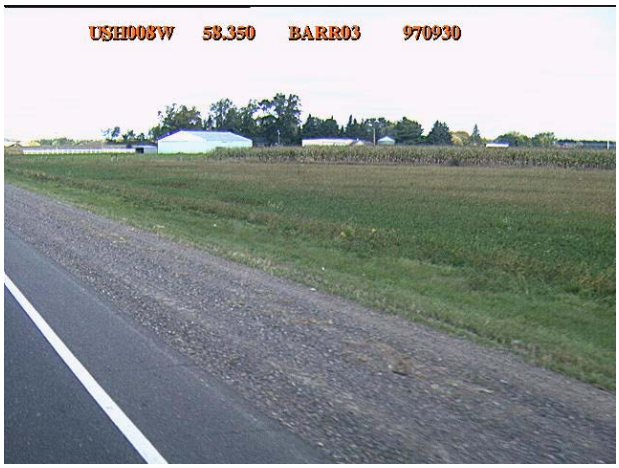


**Figure 3.1.4.4-5 Agricultural Fields Along US 8**

The Yellow River is visible along the roadway on the east side of Barron. East of Barron the agricultural landscape continues to US 53, the eastern terminus of the project.

### 3.1.5 Cultural Resources

#### 3.1.5.1 Archaeological Resources

The US 8 study corridor, in general, has a moderate to high probability for archaeological resources. Land features and past archeological knowledge of the area indicate there is a moderate to high probability of prehistoric sites located near lakes and rivers along the corridor. In the initial phases of alternative development, archaeological resources were identified in a site file search and literature search conducted by an archeological consultant.

From the file and literature review, twenty-six archaeological sites had been previously identified on the project corridor. Two of the sites were identified from the National Register of Historic Places (NRHP), thirteen sites were unevaluated, and six of the sites have not been field verified. The five remaining sites were not eligible.

Fourteen cemeteries were also noted along the project corridor and were avoided during alternative development. Four of the cemeteries are located on the existing US 8 right-of-way. Tables 3.1.5.1-1 and 3.1.5.1-2 list cemeteries and archaeological sites along the corridor. Sites listed in Table 3.1.5.1-2 were unevaluated, eligible, or not yet field-verified.

**Table 3.1.5.1-1**

**Cemeteries in the Project Area**
**Identified from Literature Review**

| Site | Name | Town |
|---|---|---|
| BPk-14 | Apple River Cemetery | Apple River |
| BPk-15 | East Balsam Cemetery | Apple River |
| BPk-62 | St. Mary's Cemetery | Apple River |
| BPk-63 | Elim Cemetery (Range Cemetery) | Apple River |
| BPk-70 | Mt. Hope Cemetery | Beaver |
| BBn-4 | St. Matthew Cemetery | Clinton |
| BBn-5 | Sacred Heart Catholic Cemetery | Almena |
| BBn-14 | Wayside Cemetery | Barron |
| BBn-36 | First Lutheran | Barron |
| BBn-55 | St. Ann Cemetery | Almena |
| BBn-56 | (Turtle Lake) | Almena |
| BBn-103 | (Prehistoric Native American) | Barron |
| BBn-134 | Native American Cemetery | Barron |
| BBn-137 | 1884 Poor Farm Cemetery | Barron |

**Table 3.1.5.1-2**
**Archaeological Sites in the Project Area**
**Identified from Literature Review**

| Site | Town | Affected by Alternative |
|---|---|---|
| 47 Pk-64 | Clayton | No |
| 47 Pk-65 | Beaver | No |
| 47 Pk- 78 Swenson | Balsam Lake | Segment I Alternatives designed to avoid (Unevaluated) |
| 47 Pk- 163 Beaver Brook | Clayton | No |
| 47 Bn-1 | Almena | Turtle Lake Alternative 3 (Unverified) |
| 47 Bn-5 | Barron | No |
| 47 Bn- 132 | Barron | No |
| 47 Bn- 133 Miller Trading Post | Barron | No |
| 47 Bn- 155 Lazy A | Stanley | No |
| 47 Bn- 156 | Stanley | No |
| 47 Bn- 160 Guy Speirs Lake | Stanley | No |
| 47 Bn- 178 Anderson Kids | Barron | No |
| 47 Bn- 185 Sweeney Pond Creek | Clinton | No |
| 47 Bn- 186 Turtle Creek | Almena | Segment V (Eligible) |
| 47 Bn-230 MC-B45 Cowely's Camp Site | Barron | No |
| 47 Bn- 262 | Almena | No |
| 47 Bn- 263 | Almena | Affected (Unevaluated) |
| 47 Bn- 264 | Almena | No |
| 47 Bn- 265 | Almena | No |
| 47 Bn- 266 | Almena | Affected (Unevaluated) |
| 47 Bn- 267 | Almena | No/Adjacent |

In addition to the literature review, an archaeological consultant conducted a Phase 1 archaeological field investigation in the fall of 2003 to identify other sites along the project corridor, verify sites identified in the literature review, and determine the need for Phase 2 archaeological investigations. From the Phase 1 field review, four sites were identified and verified as unevaluated and would require Phase 2 investigation if they fall within the preferred alternative corridor. The first three sites are located just south of Upper Turtle Lake on the mainline of Segment V. These sites, previously identified in the literature search, are listed in Table 3.1.5.1-2 as 47 Bn-186, 47 Bn-263 and 47 Bn-266. A new site identified in this field review, 47 Bn-294, would be affected by Turtle Lake Alternative 2 (Long South Bypass).

### 3.1.5.2 Historical Resources

The project historian surveyed the US 8 project corridor in the summer of 2002 to identify historic properties that may be eligible for the National Register of Historic Places (NRHP). The historical survey is required to comply with Section 106 of the 1966 National Historic Preservation Act. The area of potential effect (APE) for the corridor was defined as properties adjacent to the existing right-of-way along US 8 and along the realignment and bypass routes. Properties that were at least 50 years old were surveyed and photographed to be evaluated for historic integrity.

Twenty properties in the area of potential effects (APE) met the criteria for a historical inventory. These inventories were submitted to the State Historical Preservation Office (SHPO) with recommendations that six properties may be eligible for the NRHP. Table 3.1.5.2-1 lists the six properties for which a Determination of Eligibility (DOE) was completed by the project historian. The SHPO determined that five of the properties are eligible for the National Register.

**Table 3.1.5.2-1**

**Potentially Historic Sites for which a Determination of Eligibility was Completed**

| Codification Number | Location and Type of Property/Structure | DOE Required? | Eligible for National Register? |
|---|---|---|---|
| PK- 14/24 Deer Lake School | 1632-34 US 8–Built as one-room school in 1930. | Yes | Yes |
| PK- 14/19 County Dam Motel and Supper Club | 977 US 8–Motel and store from 1950s. | Yes | No |
| BN- 11/21 Paul Revere School | 1298 11th Street, Barron–One-story cube schoolhouse circa 1900. | Yes | Yes |
| BN- 11/7 Stebbens House | 126 East Division Ave, Barron–Victorian bed and breakfast two-story Dutch Colonial house circa 1908. | Yes | Yes |
| BN- 11/5 Heffner's Opera Block | 8 South Third Street, Barron–Concrete block commercial vernacular building, constructed 1909. | Yes | Yes |
| 75D-7 Barron Carnegie Library | 10 North Third Street, Barron–Barron Public Library | Yes | Yes |

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**Figure 3.1.5.2-1 The Stebbins House on US 8 in Barron, Erected C. 1987, Exemplifies the Georgian Revival Mode**